d) REMARKS

The claims are 7 and 8 with claim 7 being independent. Claim 7 has been amended to improve its form, as requested. Non-elected claims 1-6 have been cancelled to reduce the issues.

The Examiner had requested that certain non-idiomatic phrases as "coming short" and the like, be clarified. As suggested, the specification has been amended to clarify that these phrases mean that insufficient atoms are present in the deposited film to form the desired film. Compensation for the insufficient atoms, inter alia, is provided for by the instant invention. Support for the amendment is found, inter alia, on page 1, lines 12-19 and page 5, lines 5-10.

The objection to claim 7 under Rule 112, second paragraph, has been met by incorporating the Examiner's suggested claim language as noted on page 3, lines 3-5 of the outstanding Official Action.

The objection under Rule 112, first paragraph, has been met by deletion of the language to which objection was made. For the Examiner's benefit, "scattering" is shown to cause defects which can be corrected by ionized F-containing gas on page 10, lines 11-15; page 10, line 26 to page 11, line 4; page 18, lines 21-25 and page 21, lines 18-22.

Claims 7 and 8 were rejected as obvious over Harano or Iacovangelo in view of Pinkhasov and further in view of Toku, JP '359 or '358 and Bunshah. Claims 7 and 8 were also deemed obvious over DeLozanne in view of Noda and further in view of Toku and Bunshah. The grounds of rejection advanced on pages 4 and 5 of the Official Action are respectfully traversed.

Prior to addressing the grounds of rejection, Applicants wish to briefly review certain key features and advantages of the present claimed invention.

The present invention provides a process which can prevent deterioration of a thin film. In the process, a reaction chamber, in which a highly corrosive gas is introduced and a plasma is generated, is separated from the film-forming chamber. The reaction chamber is formed of a material having excellent corrosion resistance or is subjected to a surface treatment to enhance corrosion resistance. It is possible to make a film-forming chamber of a material having corrosion resistance or the chamber can be subjected to a surface treatment to enhance corrosion resistance. However, since the internal volume of a typical film-forming chamber is quite large, it is difficult to uniformly treat the entire surface to enhance its corrosion resistance. Where portions of the chamber are not uniformly treated, then corrosion occurs. Therefore, in the present invention, a separate reaction chamber is provided and fluorine gas is formed into a plasma in the reaction chamber.

A pressure control means controls differential pressure between the film-forming chamber and the reaction chamber. After the source gas is ionized in the reaction chamber the pressure control means is opened to introduce the ionized source gas into the film-forming chamber, while the fluoride deposition material is vaporized therein. This feature reduces film formation on the inner walls of the film-forming chamber. Further, the pressure control means prevents the plasma in the reaction chamber from diffusing into the film-forming chamber and forming impurities in the film. See page 5, lines 5-21; page 6, line 17 to page 7, line 1 and the results in the Comparative Examples, where no pressure control means separated the plasma from the film-forming chamber .

None of the cited references discloses the instant pressure control means to separate the plasma from the film-forming chamber. The Examiner has admitted that neither Harano nor Iacovangelo disclose opening a pressure control means to introduce ionized source gas. Pinkhasov does not remedy that which is missing from primary references.

Pinkhasov merely teaches that metal vapor can pass through a valve to deposit on a substrate. No valve in Pinkhasov is opened to introduce an ionized source gas (not metallic vapor) formed by a plasma into a film-forming chamber where a vapor of a fluoride deposition material is present. Accordingly, there is no motivation to combine Pinkhasov with the primary references since different, non-analogous processes are involved. No plasma process is disclosed in Pinkhasov with its attendant difficulties. Further, Bunshah teaches nothing of the problems of plasma ionization nor of how to solve problems in film formation where plasma ionization is employed.

Similarly, the Examiner admits DeLozanne does not teach openable control means. The Examiner admits that Noda fails to teach separately generating a plasma in a first chamber and then introducing a gas ionized by that plasma into a separate deposition chamber. To the contrary, in the drawings of Noda a gas is activated within the deposition chamber. See, for example, Fig. 7 in which gas is activated by coil 13 situated adjacent substrate 3 and sputtered vapor 4 passes through the gas as it is being activated. This teaches away from the present invention.

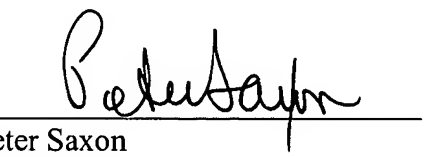
None of the references, whether alone or combined, either discloses or suggests the above-noted key features of the present claimed invention nor the advantageous effects mentioned above. In particular, the cited references fail to teach or suggest the pressure control

means which is opened to introduce a gas which is ionized separately by a plasma when forming a fluoride deposition film.

This response should be entered, since it complies with matters of form raised by the Examiner. Accordingly, the claims are allowable and should be passed to issue.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,



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